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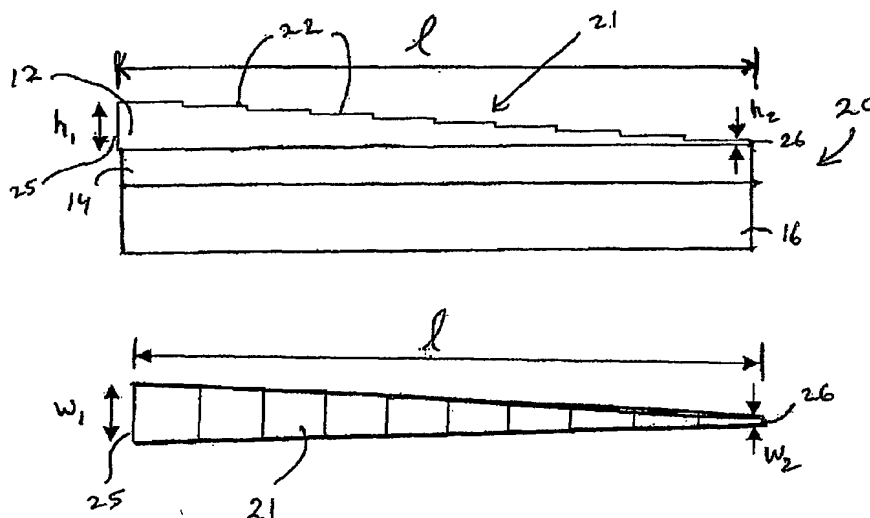
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(54) Title: SYSTEM AND TAPERED WAVEGUIDE FOR IMPROVING LIGHT COUPLING EFFICIENCY BETWEEN OPTICAL FIBERS AND INTEGRATED PLANAR WAVEGUIDES AND METHOD OF MANUFACTURING SAME



(57) **Abstract:** A tapered waveguide optical mode transformer (20) includes a tapered core formed on a planar substrate structure (16). To vertically taper the core (21), steps (22) are etched into the top surface of the core. The steps have depths and lengths along the optical axis of tapered waveguide that are selected to transform the optical mode characteristics of a desired optical fiber to the optical mode characteristics of a desired planar waveguide. The core can also be tapered horizontally to form a 2-D tapered waveguide. The tapered waveguide can be integrally included in planar lightwave circuits (PLCs) to reduce light coupling losses between optical fibers and the PLC waveguides.